

Welcome to Uruguay and ISGT LA !



Juan Carlos Miguez, *General Chair*



Daniel Slomovitz, *Technical Chair*

The IEEE PES Conference on Innovative SMART GRID Technologies (ISGT-LA 2015) Latin American, sponsored by the IEEE Power & Energy Society (PES) and hosted by IEEE URUGUAY SECTION and PES local CHAPTER, the third in Latin America, will be held on OCT 5, 6 and 7th, 2015. The Conference, declared of tourist interest by the Ministry of Tourism and Sport, will be a forum for the participants to discuss state-of-the-art innovations in Smart Grid technologies, to attend tutorials and Industry Panels. Target audience are researchers, innovators, decision-makers, regulators, investors, experts and suppliers of solutions from the industry in all Smart Grids related work and study fields.

Social and Special Functions

Coffee Pauses

MONDAY 5, 11:00 – 11:30

MONDAY 5, 15:45 – 16:15

TUESDAY, 6 11:00 – 11:30

TUESDAY, 6 16:00 – 16:30

WEDNESDAY, 7 11:00 – 11:30

WEDNESDAY, 7 16:00 – 16:30

Lunches

MONDAY 5, 12:15– 13:45

TUESDAY, 6 13:00 – 14:15

WEDNESDAY, 7 13:00 – 14:15

Welcome Cocktail

Monday, 5 20:00 to 21:30

Restaurant Rara Avis (across the Independence Square)

Women in Engineering – Young Professionals Panel

TUESDAY, 6 18:30 – 19:30

Gala Dinner

Tuesday 6, 20:00 to 22:00

Hotel Radisson, Ballroom (2nd Level)

Overview of Technical Sessions

Opening Session

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MONDAY, 5

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WEDNESDAY, 7

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WELCOME TO THE FUTURE

In UTE we work for a new Uruguay, with clean, renewable and non polluting energy. Putting innovation, technology and team work in pursuit of efficient energy. Now transforming energy into movement. Electric transportation is our goal, we are on our way there.

BIENVENIDOS AL FUTURO

En UTE trabajamos por un nuevo Uruguay, con energías limpias, renovables y no contaminantes. Poniendo la innovación, tecnología y trabajo en equipo en pos de la eficiencia energética. Transformando la energía ahora en movimiento. El transporte eléctrico es nuestra meta, hacia allí vamos.



UTE

La energía que nos une

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Organizing Committee

Juan Carlos Miguez, General Chair
John D McDonald, General co-Chair

Daniel Slomovitz, Technical Chair
Mario Vignolo, technical co-Chair
Eduardo Bergerie, Omar Paganini, technical co-Chair
Pablo Thomasset, Publications Chair



PES/IM Chapter Chair
Daniel Valle Lisboa



Uruguay Section Chair
Rafael Sotelo

[Texto sobre la seccion,]

Controles

Desde 1973 diseñamos, producimos y respaldamos equipos y sistemas para supervisión y control de redes eléctricas. A través de los años la meta ha sido siempre lograr soluciones simples y robustas adaptadas a las más variadas necesidades del cliente





IEEE is the world's largest professional association advancing innovation and technological excellence for the benefit of humanity. Through its more than 400,000 members in 160 countries, IEEE is a leading authority on a wide variety of areas ranging from aerospace systems, computers and telecommunications to biomedical engineering, electric power and consumer electronics. IEEE publishes 30 percent of the world's literature in the electrical and electronics engineering and computer science fields, has developed nearly 900 active industry standards, and annually sponsors more than 850 conferences worldwide.

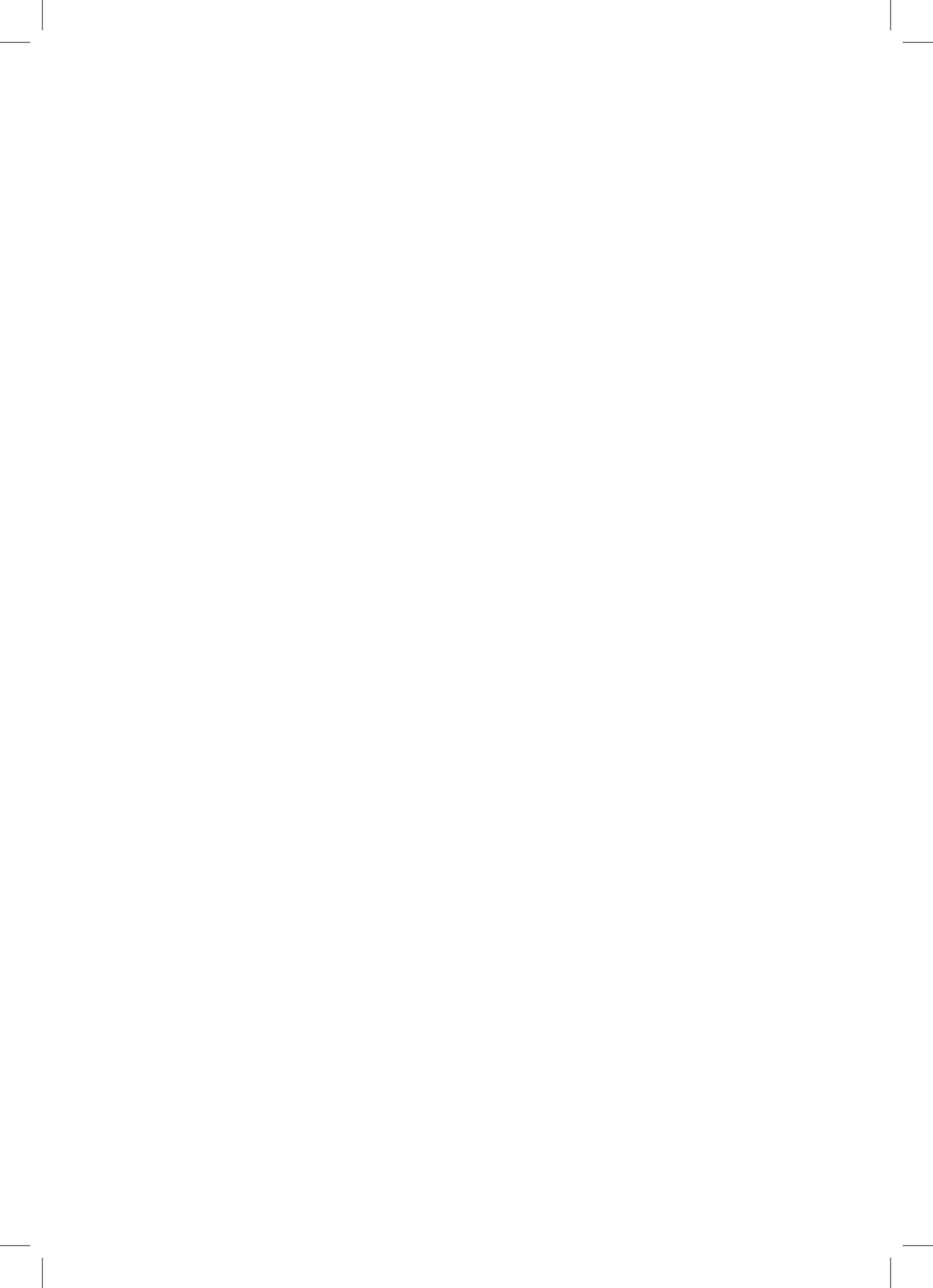
The Power & Energy Society

With over 24,000 members around the globe, the IEEE Power & Energy Society (PES) is the leading provider of scientific and engineering information on electric power & energy for the betterment of society and a trusted resource dedicated to the technical, informational, networking and professional development needs of its members.

The ISGT Series of Conferences

In 2010, the IEEE Power & Energy Society launched a new conference called Innovative Smart Grid Technologies (ISGT) with a first meeting in January at the National Institute of Standards and Technology (NIST) Conference Center in Gaithersburg, Maryland, USA. The unqualified success of the first conference and numerous requests for more inspired PES to establish ISGT as a Conference Series, and to broaden the scope of the conference to include annual offerings in the USA, and international installations which have included ISGT Conferences in Europe, Latin America, Asia, Australia and the Middle East.





Conference Room, 9:00 - 11:00**Welcome Message**

Juan Carlos Miguez, General Chair

The Power and Energy Society

Miroslav Begovic, PES President.

Miroslav M. Begovic (FIEEE'04) is Carolyn S. & Tommie E. Lohman '59 Professor and Head of Department of Electrical and Computer Engineering at Texas A&M University and Director, Division of Electrical and Computer Engineering at Texas A&M Engineering Experiment Station (TEES). Prior to that, Dr. Begovic was Professor and Chair of the Electric Energy Research Group in the School of Electrical and Computer Engineering, and an affiliated faculty member of the Brook Byers Institute for Sustainable Systems and University Center of Excellence in Photovoltaic Research at Georgia Tech. Dr. Begovic's research interests are in monitoring, analysis, and control of power systems, as well as development and applications of renewable and sustainable energy systems. For the Centennial Olympic Games in 1996 in Atlanta, he designed with Prof. Ajeet Rohatgi a 340 kW photovoltaic system on the roof of Aquatic Center at Georgia Tech, at the time the largest roof-mounted PV system in the world. He has been a member of the IEEE PES Power System Relaying Committee for two decades and chaired many of its working groups. Prof. Begovic is a Fellow of the IEEE and an IEEE PES Distinguished Lecturer. He has published about 200 journal and conference papers and has presented over 100 keynote speeches and invited talks. He currently serves as President of the IEEE Power and Energy Society.

**Matriz de Generación Inteligente de Uruguay**

DR.ING. GONZALO CASARAVILLA, Presidente de UTE.

Nació en la ciudad de Montevideo el 2/7/63. Recibió de parte de la Universidad de la República el grado de Ingeniero Electricista en 1990, el grado de Magister en Ingeniería Eléctrica en 2000 y el grado de Doctor en Ingeniería Eléctrica en 2003. Desde 1986 es docente en el Instituto de Ingeniería Eléctrica de la Universidad de la República, Uruguay donde actualmente es Profesor Titular (Gr. 5) y desde el año 2005 hasta mayo de 2010 se desempeñó en régimen de Dedicación Total.

De 2004 a 2007 fue Jefe del Departamento de Potencia del Instituto de Ingeniería Eléctrica y de 2007 a mayo de 2010 se ha desempeñado como Director del referido Instituto. Desde el año 2006 ha sido miembro del Consejo de la Facultad de Ingeniería. Desde 1988 a 2001 trabajó profesionalmente en el campo de la fabricación de convertidores de electrónica de potencia y en la automatización industrial. Hasta el año 2011 fue Investigador Nivel I del Sistema Nacional de Investigadores. En la actualidad es Presidente del Directorio de la Administración Nacional de Usinas y Trasmisiones Eléctricas (UTE), cargo que ocupa desde Mayo de 2010.



Desde 1990 está casado y tiene dos hijas nacidas en 1994 y 1996 respectivamente.

MIEM

Wanda Reder Ieee Division VII Director



MIEM

MINISTERIO DE INDUSTRIA,
ENERGÍA Y MINERÍA

Conference Room, 11:30 - 12:15**“The Future of Energy: Smart Grid and Beyond”**

The purpose of this talk is to familiarize participants with a vision for the future of energy. First, there will be a discussion of key industry/societal trends in generation, transmission, distribution and the consumer. The “smarter grid” will highlight the intelligence that has already been implemented, and the new intelligence being added now. The Smart Grid technology roadmap will discuss the Smart Grid solutions of Distribution Optimization, Transmission Optimization, Asset Optimization, Demand Optimization, Smart Meters and Communications, and Workforce and Engineering Design Optimization. Three key visionary concepts will be discussed from the points of view of technology, industry standards and policy development. The three concepts are the greater value of the integration of key technology components and the importance of interoperability, the impact of high penetration of rooftop solar PV on the distribution system, and Intelligent Electronic Device (IED) integration and enterprise data management.



John D. McDonald, P.E., is Director, Technical Strategy and Policy Development for GE Energy's Digital Energy business. John has 41 years of experience in the electric utility transmission and distribution industry. John received his B.S.E.E. and M.S.E.E. (Power Engineering) degrees from Purdue University, and an M.B.A. (Finance) degree from the University of California-Berkeley. John is a Fellow of IEEE, and was awarded the IEEE Millennium Medal, the IEEE Power & Energy Society (PES) Excellence in Power Distribution Engineering Award, the IEEE PES Substations Committee Distinguished Service Award, and the IEEE PES Meritorious Service Award. John is Past President of the IEEE PES, and Chair of the Smart Grid Consumer Collaborative (SGCC) Board. John was the IEEE Division VII Director in 2008-2009. John was on the Board of Governors of the IEEE-SA (Standards Association) in 2010-2011, focusing on long term IEEE Smart Grid standards strategy. John was elected to Chair the Smart Grid Interoperability Panel (SGIP) Board from 2010-2014. John received the 2009 Outstanding Electrical and Computer Engineer Award from Purdue University. John teaches a Smart Grid course at the Georgia Institute of Technology, a Smart Grid course for GE. John has published eighty papers and articles in the areas of SCADA, SCADA/EMS, SCADA/DMS and communications, and has co-authored four books.

SIEMENS

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Más de 55 años de experiencia y más de 600 contratos ejecutados marcan nuestra trayectoria. Participando ininterrumpidamente en la Industria a través de emprendimientos de Ingeniería Civil, Arquitectura, Montajes Industriales Infraestructura, Operación y Mantenimiento, apostamos al desarrollo profesional, tecnológico y empresarial de nuestras actividades.

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Conference Room, 11:30 - 12:15

**“Making our Distribution Smarter and Low Carbon:
A UK Perspective”**

Luis Ochoa - Univ. of Manchester, UK.



This keynote address will introduce the potential impacts of high penetrations of low carbon technologies on distribution networks as well as future solutions that might allow deferring the need of traditional reinforcements. Different smart grid projects carried out in the UK will be discussed so as to provide insights on medium and low voltage networks as well as the trialled technologies.

Dr Luis(Nando) Ochoa is Senior Lecturer in Smart Distribution Networks at The University of Manchester, UK. His expertise in network integration of low carbon technologies has led to 100+ publications, 40+ technical reports, and one patent filed by Psymetrix Ltd.

Conference Room, 14:00 - 15:45**T1A-T2A: “Distribution System Modeling, Automation, Management and Advanced Applications”**

John D. McDonald, P.E. GE Energy Management - Digital Energy 4200 Wildwood Parkway, Atlanta, GA, johnd.mcdonald@ge.com

This course introduces the intuitive concepts, fundamental theories, practical technologies on system modeling, automation management, including the core functionalities and real use cases of the integrated Distribution Automation/Distribution Management Systems (DA/DMS) and the advanced applications in Smart Distribution. The potential audience would include power system planning/operation engineers, project/product managers, business leaders in power utilities, smart grid solution providers, system developers, research institutes, as well as individual researchers, college students and other individuals working on or interested in the Smart Distribution Solutions.

The course will cover the following break-down topics: Overall Framework and Architecture of DA/DMS Systems in Smart Distribution, Distribution System Modeling for automation and management, Static and Dynamic Data for DA/DMS, Advanced Real-time and Analytic Applications for Distribution System Operation, Analysis and Optimization, Distributed and Renewable Energy Resource (DER) Management and Optimization, Consumer Participation and the Impacts to the Distribution System Operation, DMS system integration with other systems in Smart Distribution and New Trend in DA/DMS Development.

John D. McDonald, P.E., is Director, Technical Strategy and Policy Development for GE Energy Management’s Digital Energy business. John has 40 years of experience in the electric utility industry.

Room Gauguin, 14:00 - 15:45**T1B: “Evolution of EMS Control Centers - Managing the future Smart Grid PMU Synchrophasor Measurements at Control Centers”**

Jay Giri, Alstom Grid, USA

Energy Management Systems (EMS) have been deployed for decades to monitor and manage the electricity grid in real-time. Today these EMS capabilities are enhanced quite dramatically with growth of synchrophasor PMU measurements.

This tutorial will describe: The history and evolution of the EMS from its digital genesis in the 1970’s. The primary functions of a modern EMS. Emerging new industry drivers. Emerging new technology trends. Impact of growth of microgrids, renewables and distributed generation on the EMS. Growth of Phasor Measurement Units (PMUs) and synchrophasor measurements worldwide. Wide Area Monitoring (WAMS). Situational Awareness tools. The EMS for the future grid. Integration of synchrophasor PMU data. Monitoring grid dynamics. Island detection and restoration tools. Big Data Analysis. Fast forensic analysis. Training for grid dynamics. Advanced visualization tools. Providing grid operators with “actionable information” for prompt decision-making. Practical ex-

amples of utilities where such advanced tools are deployed. Concluding thoughts on the challenges and opportunities to manage the future grid .

Jay is Director of Power Systems Technology and Strategic Initiatives at Alstom Grid's NMS business in Redmond, Washington. He leads a team of power system engineers who deliver market applications and synchrophasor/phasor measurement unit (PMU) applications to control centers. He is an affiliate professor at the University of Washington. In 1978, Jay and 11 other engineers co-founded Energy System Computer Applications (ESCA), later became part of Alstom Grid. Jay designed and implemented the original software for the ESCA automatic generation control (AGC) and dispatcher training simulator (DTS) functions. He has a PhD from Clarkson University in New York and a B.Tech from the Indian Institute of Technology (IIT), Madras. He is an IEEE Fellow and member of the IEEE Power & Energy Society (PES) Governing Board. He is an Alstom Grid Senior Fellow.

Room Cezanne, 14:00 - 15:45**T1C: “Standards, RFC and protocols for Smart Grid”**

Ing. Gustavo Giannattasio, IEEE Smart Cities Committee

The tutorial deals with actual standards and requests for comments that made possible the development of Communications for Smart Grid application Will cover IEEE as well as IETF Relevant Communications standards at medium difficulty level. Will also explore technology trends and security recommendations for a safe Smart Grid Deployment.

Prerequisite : basic understanding of Communications protocols.

Ing. Gustavo Giannattasio is graduated as Electrical engineer with Telecom specialization at UDELAR University Uruguay with Post Degree in Electronic design engineering at Philips International Institute Eindhoven Holland, MBA with honors at UCUDAL , Holds a PMP certifications provided by the Project Management Institute USA. Professor of Routing and switching at ORT University Uruguay. Former Director of IEEE Latinamerica Region, Past Beard member of Engineering Management Council appointed by the Communications Society COMSOC.

Room Renoir, 14:00 - 15:45**T1D-T2D: “Techno-economic optimisation and flexible planning under uncertainty of smart distribution networks, Microgrids and district energy systems”**

*Dr. Pierluigi Mancarella, The University of Manchester, UK,
p.mancarella@manchester.ac.uk*

*Dr. Eduardo Alejandro Martínez Ceseña, The University of Manchester, UK,
eduardo.martinezcesena@manchester.ac.uk*

This tutorial overviews different theoretical frameworks that have been recently developed in various projects at the University of Manchester in the area of techno-economic optimisation and flexible planning of innovative distributed energy

systems with large scale penetration of DER in the presence of small scale (short term) and large scale (long term) uncertainties.

Dr. Mancarella received the Ph.D. degree in Electrical Engineering (Power Systems) from the Politecnico di Torino, in Italy in 2006. He is currently a Reader in Future Energy Networks and part of the Electrical Energy and Power Systems at the University of Manchester. He has co-authored roughly 100 research papers and is currently involved in about 15 research projects sponsored by the EPSRC, the European Commission, and various industrial companies, in the area of techno-economics of multi-energy systems, investment under uncertainty for integrated energy infrastructure, business cases for smart grid technologies, and risk and resilience analysis of future networks.

Dr. Martínez Ceseña received the Ph.D. degree in Power Systems from the University of Manchester, UK, in 2012. Since obtaining the degree, he has worked as a Research Associate in the School of Electrical and Electronic Engineering in the same institution. Dr. Martínez Ceseña has co-authored about 20 research papers and has participated in several European and UK research projects including ADDRESS, APS, Capacity to Customers and COOPERaTE; specifically, in work streams related to the integration of new smart network solutions, economic and financial assessment under significant sources of uncertainty, real options theory and business models.

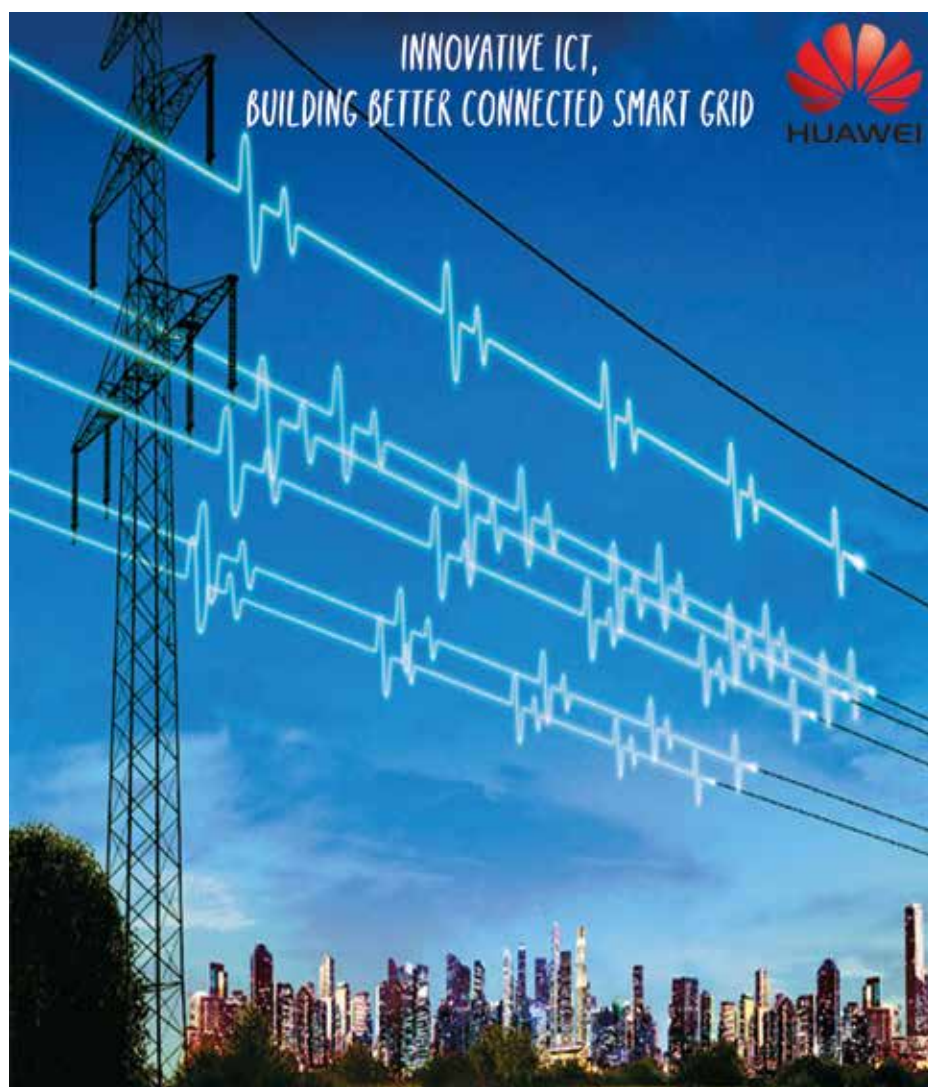
Room Renoir, 14:00 - 15:45

T1E-T2E: “Advanced Modelling of Smart Distribution Networks Using OpenDSS”

Dr Luis(Nando) Ochoa, University of Manchester, UK

This tutorial will give researchers, consultants and practitioners interested in modelling Smart Distribution Networks the opportunity to learn about the basic and advanced applications of OpenDSS, an open source state-of-the-art distribution network analysis software package developed by EPRI (USA). The tutorial includes hands on aspects for a direct familiarisation with OpenDSS as well as details of the modelling frameworks used in more advanced studies which will be illustrated with three industrial Smart Grid projects in the UK.

Dr Luis(Nando) Ochoa is Senior Lecturer in Smart Distribution Networks at The University of Manchester, UK. His expertise in network integration of low carbon technologies has led to 100+ publications, 40+ technical reports, and one patent filed by Psymetrix Ltd.



La solución Smart Grid de Huawei permite equilibrar dinámicamente la oferta y el consumo de energía, para mejorar la eficiencia y confiabilidad en el suministro.

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Room Gauguin, 16:15 - 18:00**T2B: “Volt-VAR Control to Peak Load Relief and Energy Efficiency in Distribution Smart Grids”**

*Antonio Padilha Feltrin, Universidade Estadual Paulista
campus de Ilha Solteira Sao Paulo, Brazil, padilha@dee.feis.unesp.br
Darwin Alexis Quijano Rodezno, Universidade Estadual Paulista
campus de Ilha Solteira, Sao Paulo, Brazil, alexisqr@yahoo.es*

The approach called Conservation Voltage Reduction (CVR) can be defined as being the practice of controlling the voltage levels on the network in order to promote a reduction in energy demand, considering that loads in the medium voltage (MV) networks are predominantly voltage dependent. It can be considered a form of demand management, especially in networks with a strong presence of residential and commercial customers.

In this tutorial, we will address concepts of CVR and IVCC settings and present load models in order to better represent the loads in MV networks. Then will be presented and discussed several cases of CVR application performed by different distribution companies in the world. Concluding, case studies will be shown with the presence of OLTC, AVR, capacitors and distributed generators. Special highlights will be emphasized for models and forms of voltage control in distributed generators. The CVR applications will allow us to describe the positive economic and technical benefits showing significant values of energy savings for a typical day of operation, and peak load relief important in both distribution and the transmission system.

Antonio Padilha Feltrin possui graduação em Engenharia Elétrica pela Universidade Federal de Itajubá (1980), mestrado em Engenharia Elétrica pela Universidade Estadual de Campinas (1986), doutorado em Engenharia Elétrica pela Universidade Estadual de Campinas (1991) e pós doutorado na University of Wisconsin-Madison EUA (1997). Atualmente é professor titular da Universidade Estadual Paulista Júlio de Mesquita Filho, Unesp - Ilha Solteira. Consultor Ad-Hoc da FAPESP, CNPq, Kentucky Science & Engineering Foundation (EUA) e Fondecyt (Chile). Tem experiência na área de Engenharia Elétrica, com ênfase em Sistemas Elétricos de Potência, atuando principalmente nos seguintes temas: sistemas de distribuição de energia elétrica, fluxo de potência, dinâmica de sistemas elétricos, estabilidade transitória e planejamento de sistemas elétricos.

Darwin Alexis Quijano Rodezno possui graduação em Engenharia Elétrica pela Universidad Nacional Autónoma de Honduras - UNAH - (2008). Possui Mestrado em Engenharia Elétrica pela Universidade Estadual Paulista Julio de Mesquita Filho - UNESP - Campus de Ilha Solteira. Atualmente é estudante de doutorado pela Universidade Estadual Paulista Julio de Mesquita Filho - UNESP - Campus de Ilha Solteira. Tem experiência na área de Engenharia Elétrica com ênfase em Sistemas Elétricos de Potência.

Room Cezanne, 16:15 - 18:00**T2C: “Transformers for Renewable Energy Applications”**

*Álvaro Carlos Portillo Laurino,
Power Transformers Senior Engineer Consultant, Uruguay-Brazil.*

The increasing use of renewable energy has created new requirements and challenges in the design of transformers. The transformers used in installations of wind or solar energy have installation and operating characteristics that strongly affect its design. The presentation will cover these special design and operating aspects of these transformers. The presentation is aimed at professionals working in utilities and are responsible for the specification, design review, acquisition, operation and maintenance of transformers for renewable energy applications.

Álvaro Portillo (M’84–SM’01) was born in Uruguay in 1954. He graduated in Electrical Engineering from the Uruguayan Republic University, Montevideo, Uruguay, in 1979. He was with the Uruguayan electrical utility (UTE) up until 1985 in activities related to transformers acceptance, installation, and maintenance. From 1985 to 1999, he was with MAK S.A. (a Uruguayan manufacturer of transformers); from 2000 to 2007, he was a Consultant with TRAF0 (a Brazilian manufacturer of transformers); and since 2007, he has been a Consultant in the development of software tools for transformer design at WEG (a Brazilian manufacturer of transformers). As Consultant make Design Review for UTE (Uruguay), Iberdrola (Spain) and ISA (Colombia). He has been a Professor at the Uruguayan Republic University since 1977, and is now responsible for post-graduation courses about transformers (specification, design, operation, maintenance, etc.).



Conference Room, 11:30 - 13:00**PA2A: Smart Grids in Latinamerica**

Chair: Renato Cespedes, RGConsulting, Colombia

This panel will focus on projects and status of SG Developments in Latin America.

- Renato Cespedes (RGConsulting, CO) "Desarrollo de Smart Grids en Colombia"
- Nelson Fonseca Leite, (President of ABRADEE, BR) "Programa Brasileiro de Redes Eléctricas Inteligentes"
- Eduardo Bergerie (UTE, UY)
- Adrian Inda Ruiz (Instituto de Investigaciones Electricas, MEX)
- Guillermo Gimenez (Univ. de Chile)

Room Gauguin, 11:30 - 13:00**PA2B: Phasor Measurement Units in Electrical Systems**

Chair: Jay Giri, (ALSTOM GRID, USA)

The panel will present real projects and results of the application of PMU Technologies in Power Networks

- Ricardo Nocetto (UTE, UY)
- Aharon De La Torre, (CENACE, Ecuador)
- Ramon Leon, (ISA Colombia)
- Carla Hernandez (CDEC- SING, Chile)

Room Renoir, 11:30 - 13:00**PA2D: Integration of Low-Carbon into Distribution Networks:
International experiences**

Chair: Luis(Nando) Ochoa, (The University of Manchester, UK)

The increasing need to decarbonise our electricity systems in cost-effective ways is placing significant economic and technical challenges to distribution network operators around the world. This panel puts together the expertise and practical experience of researchers and consultants from Costa Rica, Brazil, Chile and the UK closely involved in industrial projects. As such, the panel will present different international perspectives, challenges and solutions to integrate low carbon technologies to LV and MV distribution networks including projects involving photovoltaic systems, storage, electric vehicles and demand response.

- "Financial implications of rooftop PV integration to the Costa Rican power utility: A case study" by Prof Gustavo Valverde, University of Costa Rica, Costa Rica
- "Integration of new technologies into Brazilian distribution networks: A CPFL experience" by Prof Walimir Freitas, State University of Campinas (UNICAMP), Brazil
- "Increasing resilience of distribution networks against natural disasters through distributed energy resources" by Prof Rodrigo Moreno, University of Chile, Chile
- "Unlocking the voltage-led demand response from UK residential loads" by Dr Luis(Nando) Ochoa, The University of Manchester, UK



Conference Room, 14:15 – 15:00

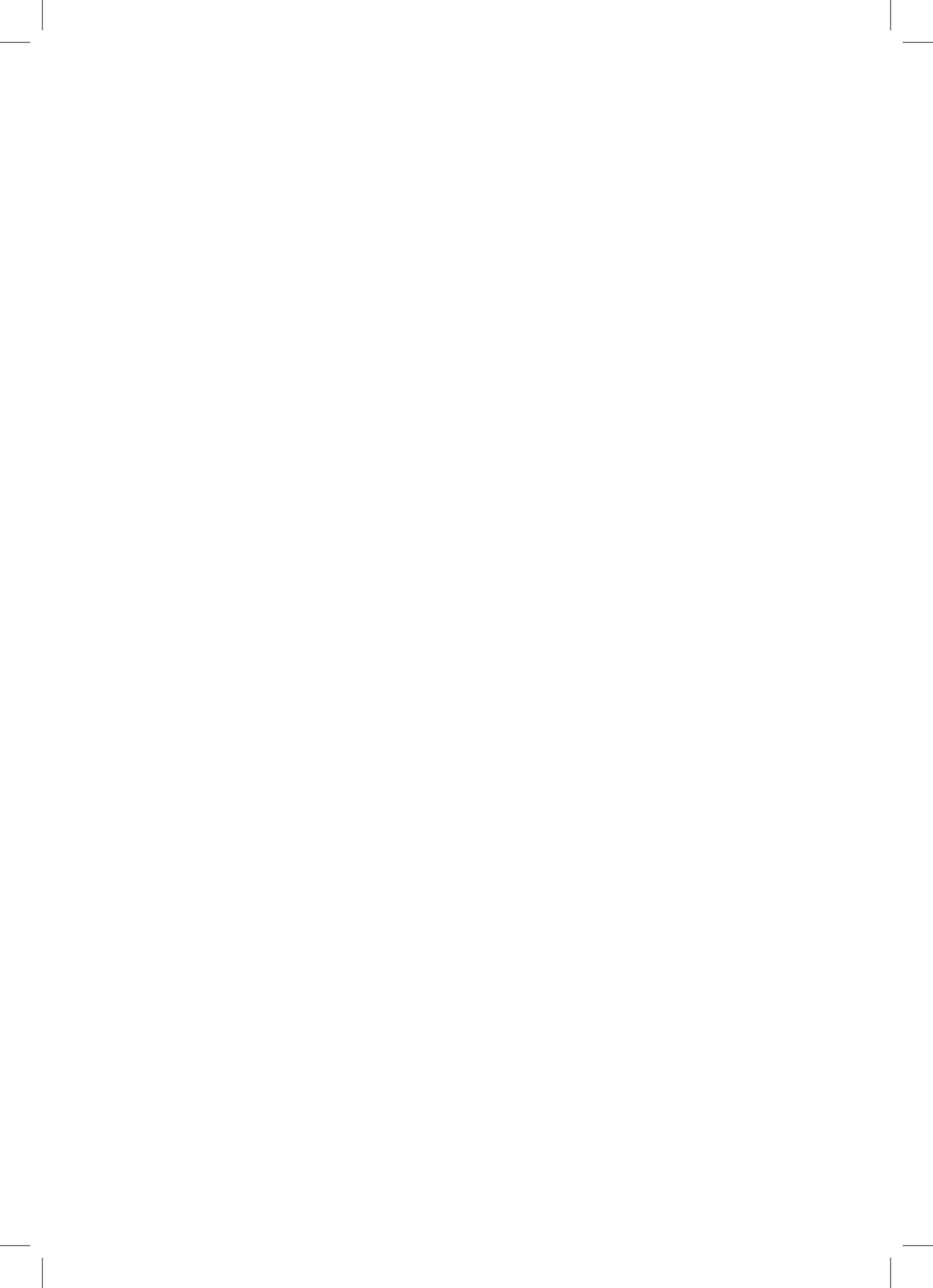
**“Changing the Conversation of Grid Modernization
with Energy Storage”**

Wanda Reder, Chief Strategy Officer - S&C Electric Company, USA



The electric grid is undergoing significant transformation from the introduction of digital technologies, policies encouraging the growth of renewable and distributed energy resources, and increasing engagement of electricity customers and businesses in both managing and producing energy. This presentation discusses a vision for the grid of the future, while especially highlighting the opportunities for energy storage and the challenges that remain.

Wanda Reder is the Chief Strategy Officer at S&C Electric Company, providing preeminent solutions for protecting, switching and controlling medium voltage electrical infrastructure. Prior to S&C, Wanda held numerous leadership positions in electric utilities such as Exelon and Northern States Power (now Xcel) having responsibility for asset investment strategy, planning, engineering, unregulated business start-ups, and more.



Conference Room, 09:00 - 11:00**S1A: Impact on Power Systems & Stability (Part1)**

Chair: Luis Ochoa (The University of Manchester, United Kingdom)

Passivity-based control of energy storage units in Distributed Generation Systems

Ricardo Peña (CONICET & Universidad Nacional de la Patagonia San Juan Bosco, Argentina); Roberto D. Fernández (Universidad Nacional de la Patagonia San Juan Bosco, Facultad de Ingeniería, Argentina); Ricardo J Mantz (UNLP, Facultad de Ingeniería & CICPBA, Argentina); Pedro Battaiotto (UNLP, Facultad de Ingeniería, Argentina).

Analysis of the penetration and impacts of hybrid and electric vehicles in the electrical system of Uruguay.

Diego Oroño (Universidad de la República & Universidad de la República, Uruguay); Mario Vignolo (Facultad de Ingeniería, UDELAR, Uruguay); Virginia Echinope (Universidad de la República & Facultad de Ingeniería - Uruguay, Uruguay).

Three Phase Fast Decoupled Power Flow for Emerging Distribution Systems.

Renan Portelinha (Federal University of Paraná, Brazil); Odilon Tortelli (UFPR, Brazil).

Planificación de Sistemas de Transmisión con Gran Penetración de Generación Distribuida.

Pablo Pena (Universidad de la República & UTE, Uruguay); Nicolas Morales (UTE, Uruguay); Michel Artenstein (Universidad de la República & Estudios y Proyectos de Trasmisión, UTE, Uruguay); Andrea Pizzini and Cedric Zoppolo (UTE, Uruguay).

Room Gauguin, 09:00 - 11:00**S1B: Energy and Distribution Management Systems (Part 1)**

Chair: Jose Joskowicz (Universidad de la República & Facultad de Ingeniería, Uruguay)

An Artificial Immune Approach for Service Restoration in Smart Distribution Systems

Denisson Oliveira (Federal University of Itajuba, Brazil); Antonio Souza (Universidade Federal de Itajubá, Brazil); Adriano Almeida and Isaías Lima (Federal University of Itajuba, Brazil).

Multiobjective Voltage Control in Smart Distribution Power Systems

Denisson Oliveira, Diogo Marujo and Marcos Santos (Federal University of Itajuba, Brazil); Benedito D. Bonatto (UNIFEI - Federal University of Itajuba, Brazil); Hector Arango (Federal University of Itajuba, Brazil); Antonio Souza (Universidade Federal de Itajubá, Brazil); Luiz F. Delboni (Federal University of Itajuba, Brazil); José Maria de Carvalho Filho (UNIFEI – Universidade Federal de Itajubá, Brazil); Paulo M Silveira (Federal University of Itajuba - UNIFEI, Brazil); Luis Antonio Felber (Companhia Energetica de Minas Gerais & Federal University of Itajubá, Brazil); Mozart Braga Junior (Companhia Energetica de Minas Gerais, Brazil)

Multi-Objective Optimization Model for Distribution Systems Restoration

Daniel Gazzana and Gustavo Ferreira (UFRGS, Brazil); Arturo S. Bretas (Electrical Engineering Department, Federal University of Rio Grande do Sul, Brazil); Rochele Silva (UFRGS, Brazil); Arlan Bettiol and Antônio Carniato (NEO DOMINO Consultoria e Pesquisa LTDA, Brazil); Luis Fernando do Nascimento Passos (Neo

Domino Pesquisa em Sistemas Elétricos Ltda., Brazil); Rafael Homma and Fernando Molina (Celesc Distribuição S.A., Brazil)

Real-Time Battery Management Algorithm for Peak Demand Shaving in Small Energy Communities

Seksak Pholboon (The University of Nottingham, United Kingdom); Mark Sumner and Edward Christopher (University of Nottingham, United Kingdom); Stuart Norman (E.ON Technologies (Ratcliffe) Limited, United Kingdom)

Room Cezanne, 09:00 - 11:00

S1C: Information and Communications Technology

Chair: Jorge Costa (UTE, Uruguay)

Hybrid Communication Module - Motivations, Requirements, Challenges and Implementations

Johnny Mafra, Jr. and Márcio Hosami (FITec, Brazil); Lucas Freitas, Marcus Martinnelli and Antonio Almeida (AES Eletropaulo, Brazil)

Optimal Dimensioning of FiWi Networks over Advanced Metering Infrastructure for the Smart Grid

Esteban Inga-Ortega and Arturo Peralta-Sevilla (Universidad Politécnica Salesiana & Universidad Pontificia Bolivariana, Ecuador); Roberto Carlos Hincapié (Universidad Pontificia Bolivariana, Colombia); Ferney Amaya (GIDATI Research Group, Colombia); Idelfonso Tafur Monroy (Technical University of Denmark, Denmark)

Khimo, a secure access platform for endpoint smart grid connectivity

Juan Pechiar (Universidad de la República & IEEE Uruguay Section, Uruguay); Federico Núñez and Alberto Canabal (Ikatu, Uruguay)

Channel Modeling and Characterization of outdoor Low Voltage NB-PLC for AMI

Bilal Masood (COMSATS Institute of Information Technology, Lahore, Pakistan); Sobia Baig (COMSATS Institute of Information Technology, Pakistan)

Room Renoir D, 09:00 - 11:00

S1D: SG in Electricity Markets and Interoperability

Chair: Jorge Calderón-Guizar (Instituto de Investigaciones Eléctricas, Mexico)

A Methodology for Real-time Quantification of Financial Losses in Distribution Systems Based on Automated Measurements

Tatiano Busatto (Federal University of Rio Grande do Sul, Brazil); Bibiana Petry and Sérgio Haffner (Universidade Federal do Rio Grande do Sul, Brazil); Flávio Lemos (Federal University of Rio Grande do Sul, Brazil); Luís Fernando Pereira (Universidade Federal do Rio Grande do Sul, Brazil); Luís Pereira (Federal University of Rio Grande do Sul, Brazil); Paulo Pereira (CEEE-D, Brazil)

An Agent-Based Negotiation Approach for Balancing Multiple Coupled Control Domains

Aisha Umair, Anders Clausen and Bo Jørgensen (University of Southern Den-

mark, Denmark)

An approach to an electricity tariff for responsive demand in the Uruguay of next years with high penetration of wind and solar energy

Lorena Di Chiara, Felipe Palacios and Pablo Soubes (ADME, Uruguay); Ruben Chaer (Institute of Electrical Engineering - University of the Republic Oriental del Uruguay, Uruguay); Gonzalo Casaravilla and Enzo Coppes (UTE, Uruguay)

Socioeconomic Analysis of Incentive Public Policies for the Use of Renewable Energy per Consumer Class in Brazil

Lígia Pereira, Sérgio Lusvarghi, Lucas Arango and Hector Arango (Federal University of Itajuba, Brazil); Benedito D. Bonatto (UNIFEI - Federal University of Itajuba, Brazil)

Metodologia de Incentivos e Penalidades para Distribuidoras de Energia Elétrica em Diferentes Níveis de Qualidade do Serviço

Jenny González, P (Universidade de São Paulo, Brazil); Carlos Marcio Vieira Tahan (Escola Politécnica – USP, Brasil)

Conference Room, 16:30 - 18:30

S4A: Impact on Power Systems & Stability (Part 2)

Chair: Jay Giri (Alstom Grid, USA)

Optimal Placement of Voltage Sag Monitors in Smart Distribution Systems: Impact of the Dynamic Network Reconfiguration

Jairo Blanco-Solano and Johann Petit (Universidad Industrial de Santander, Colombia); Gabriel Ordóñez-Plata (Universidad Industrial de Santander & UIS, Colombia)

On the Integrated PV Hosting Capacity of MV and LV Distribution Networks

Andrea Ballanti and Luis Ochoa (The University of Manchester, United Kingdom)

Analysis of the Impact of New Power Sources to Voltage Sags Using Zbus

Cassio Bortolosso and Roberto Chouhy Leborgne (Universidade Federal do Rio Grande do Sul, Brazil)

CPS1-compliant Economic Dispatch for a Single Balancing Authority System

Sebastian Carrasco and Hector Chavez (Universidad de Santiago, Chile)

Room Gauguin, 16:30 - 18:30

S4B: Energy and Distribution Management System (Part 2)

Chair: Osama Mohammed (Florida International University, USA)

A Power Management System for Planned & Unplanned Grid Electricity Outages

Ali Hooshmand (NEC Laboratories America, USA); Babak Asghari (NEC Labs America, USA); Ratnesh Sharma (NEC Laboratories America Inc, USA)

Economic Operation of Distribution Networks with Distributed Generation and Quality of Service

Enrique Briglia and Sebastián Alaggia (UTE, Uruguay); Fernando Paganini (Universidad ORT Uruguay, Uruguay)

Assessment of Conservation Voltage Reduction Effects in Networks with Distributed Generators

Darwin Quijano (Universidade Estadual Paulista - UNESP, Brazil); Antonio Padilha Feltrin (UNESP-IS, Brazil)

Estimação de Estados Generalizada via Método Desacoplado Rápido

Ellen Nogueira and Monica Abido (Universidade Federal do Paraná, Brazil); Elizete Lourenço and Odilon Tortelli (UFPR, Brazil)

Multi-agent Systems Applied for Restoration of Power Networks Supported by Micro Grids
Fernando Marçal (Universidade Federal do Ceará, Brazil); Ruth P.S. Leao (Federal University of Ceará, Brazil); Janaína Almada, Raimundo Sampaio and Giovanni Cordeiro Barroso (Universidade Federal do Ceará, Brazil); Fernando Luiz Marcelo Antunes (University Federal of Ceará, Brazil); Janaína Rocha (Universidade Federal do Ceará, Brazil)

Room Cezanne, 16:30 - 18:30

S4C: Computational Methods and Optimization Techniques

Chair: Mario Vignolo (Facultad de Ingeniería, UDELAR, Uruguay)

Computational model for the analysis of distributed generation in systems including smart grids

Camilo Sepúlveda (Universidade Federal do Rio Grande do Sul, Brazil); Mariana Resener (Companhia Estadual de Distribuição de Energia Elétrica & Universidade Federal do Rio Grande do Sul, Brazil); Sérgio Haffner (Universidade Federal do Rio Grande do Sul, Brazil); Luís Pereira (Federal University of Rio Grande do Sul, Brazil)

Automatic Restoration of Active Distribution Networks Based on Tabu Search Specialized Algorithm

Renzo Vargas (UNESP, Brazil); Waldemar Pereira Mathias Neto (COPEL, Brazil); Luís Gustavo Silva (Instituto Federal de Goiás, Campus Itumbiara, Brazil); José R S Mantovani (UNESP, Brazil)

Predicting Weather-Associated Impacts in Outage Management Utilizing the GIS Framework

Po-Chen Chen, Tatjana Dokic, Nicholas Stokes, Daniel Goldberg and Mladen Kezunovic (Texas A&M University, USA)

A Multi-Objective Analysis for Planning Electric and Natural Gas Distribution Networks
Carlos Saldarriaga, Ricardo Hincapié and Harold Salazar (Universidad Tecnológica de Pereira, Colombia)

Use of Computational System for Analysis of Power Quality in Smart Grid

Edison Motoki (UNIFEI, Brazil); Filipe Perez, Homero Ribeiro and Paulo Vitor de Souza (Universidade Federal de Itajubá, Brazil); José Maria de Carvalho Filho (UNIFEI – Universidade Federal de Itajubá, Brazil); Paulo Ribeiro (Unifei, Brazil)

Room Renoir D, 16:30 - 18:30

S4D: Smart Grids Projects and Experiences

Chair: Renato Cespedes (Rconsulting Group, Brazil)

Active power loss minimization in the santa cruz and baltra hybrid energy system using particle swarm optimization

Augusto F. Porras-Ortiz (Universidad Nacional de San Juan & UNSJ-CONICET, Argentina); Jonathan Layedra (National Polytechnic School, Ecuador); Hugo Arcos (Escuela Politécnica Nacional Quito Ecuador, Ecuador)

Smart Area Aachen - In Field Test of Meter Placement and State Estimation

Algorithms for Distribution Grids

David Echternacht (RWTH Aachen University & Institut für Elektrische Anlagen und Energiewirtschaft (IAEW), Germany); Muriel Franken (RWTH Aachen University, Germany); Uwe Geulen (Stadtwerke Aachen Aktiengesellschaft, Germany); Werner Feilhauer and Werner Schrieder (PSI AG, Germany); Peter Zimmer (STAWAG, Germany); Albert Moser (IAEW, Germany)

Smart Management of Transmission Network in UTE

Julián Malcón, Gabriel Sardi, Elías Carnelli and Ricardo Franco (Usinas y Trasmisiones Eléctricas del Estado - UTE, Uruguay)

A Statistical Analysis of EV Charging Behavior in the UK

Jairo Quirós-Tortós and Luis Ochoa (The University of Manchester, United Kingdom); Becky Lees (EA Technology Limited, United Kingdom)

Future Grid Business Model Innovation: A Prosumer-Based Cost-Benefit Framework for Valuation of Distributed Energy Resources

Marcelo Sandoval (Georgia Institute of Technology & ProsumerGrid, USA)

Room Picasso: 15:00 - 18:30

PoCM3: Computational Methods and Optimization Techniques (Part 1)

Chair: Gonzalo Aristoy (University of Republic Uruguay & UTE, Uruguay)

A Multiagent System Approach and Integer Linear Programming for Transformers Relocation in Power Distribution System.

Alexandre de Souza (University Of Sao Paulo, Brazil); Nelson Kagan (Universidade de São Paulo, Brazil); Klaus de Geus (UFPR, Brazil).

Income Classification of Residential Consumers Through Intelligent Techniques and Load Curves.

Danilo Gastaldello and Haroldo Amaral (Universidade de São Paulo, Brazil); André Nunes de Souza (Universidade Júlio de Mesquita Filho, Brazil); Caio C Oba Ramos (UNESP - Univ Estadual Paulista, Brazil)

A self-organizing client / server allocation algorithm for applications with non-linear cost functions.

Hanno Hildmann and Sebastien Nicolas (NEC Labs Europe, Germany)

Sequential Learning Function applied to the design and tuning of a Fuzzy Controller for VSC
Ivan Riaño (Universidad Distrital Francisco José de Caldas, Colombia).

Deteccão de Irregularidades no Consumo de Energia Elétrica Usando Árvores de Decisão
João Paulo Vieira and Yasmin Correa (UFPA, Brazil); Flávia Monteiro (Federal University of Pará, Brazil); Rodrigo Carvalho and Antônio Tobias (UFPA, Brazil); Marcus Vinicius Nunes (Universidade Federal do Pará, Brazil); Ubiratan Holanda Bezerra (UFPA, Brazil); Maria Emilia de Lima Tostes (Federal University of Pará - UFPA & CEAMAZON, Brazil); Rafael Oliveira (CELPA, Brazil).

A Complex Network Analysis of the Brazilian Power Test System.

Elizandra Coelho (Federal University of Espírito Santo, Brazil); Joelson Thomazelli (Federal University of Espírito Santo, Brazil); Marcia Paiva (Federal University of Espírito Santo & LabTel, Brazil); Marcelo Segatto (Federal University of Espírito Santo, Brazil).

Room Picasso: 15:00 - 18:30

PoIS3: Impact on Electric Power Systems and Stability (Part 1)

Chair: Gonzalo Aristoy (University of Republic Uruguay & UTE, Uruguay)

A Granular Monte Carlo Based Methodology to Estimate PV Generation Impacts on the Utility Long-Term Energy Planning

José Andrade, Ricardo Torquato and Walimir Freitas (University of Campinas, Brazil)

Definition of operating system of distributed generation sources through the application of macbeth multicriteria method for decision making

R. Azevedo (INSTITUTO FEDERAL SUL-RIO-GRANDENSE, Brazil); W. Brignol (Instituto Federal de Educação Ciência e Tecnologia Sul-Riograndense, Brazil); Luciane Canha (Federal University of Santa Maria (UFSM), Brazil); Ana Carolina Santos (Universidade Federal de Santa Maria, Brazil); Alexandre Barin (Federal Univer-

sity of Santa Maria, Brazil).

Integration of Distributed Generation in Power Distribution Networks and its Structure as an Intelligent Generation System.

Gustavo Perez Alvarez (Universidade Federal de Sergipe, Brazil); Nelson Kagan (Universidade de São Paulo, Brazil).

Analysis of the Sandia Frequency Shift (SFS) Islanding Detection Method with a Single-Phase Photovoltaic Distributed Generation System.

Marcos Vinícios Gomes dos Reis (Campinas State University, Brazil); Tarcio André dos Santos Barros (Unicamp, Brazil); Adson Moreira and Paulo Sergio Nascimento, Filho (Universidade Estadual de Campinas, Brazil); E Ruppert (University of Campinas, Brazil); Marcelo Villalva (Campinas State University, Brazil).

Fault Ride Through Capability and Voltage Support in Distribution Grid With Photovoltaic Distributed Generation.

Lenoardo H. M. Leite (Federal University of Minas Gerais & Fundação para Inovações Tecnológicas - FITec, Brazil); Wallace Boaventura (Federal University of Minas Gerais, Brazil); Luciano de Errico (UFMG, Brazil); Eduardo Nohme Cardoso and Ruan Dutra (Federal University of Minas Gerais, Brazil); Bruno Marciano Lopes (CEMIG, Brazil)

Evaluation of Distributed Generation Impacts on Distribution Networks under Different Penetration Scenarios.

Gabriel Quiroga (Sinapsis Inovação em Energia, Brazil); Carlos Frederico Meschini Almeida (University of São Paulo - USP, Brazil); Henrique Kagan and Juan Amasifen (Sinapsis Inovação em Energia, Brazil); Elio Vicentini (AES Eletropaulo, Brazil)

Time Series Studies for Optimal Allocation of Electric Charging Stations in Urban Area
Marcelo Martins (Universidade Estadual de Campinas, Brazil); Fernanda Trindade (UNICAMP, Brazil).

Room Picasso: 15:00 - 18:30

PoMi3: Distributed Energy Resources - MICROGRIDS (Part 1)

Chair: Marcelo Brehm (UTE, Uruguay)

The Regulatory Challenge of Integrating Microgrids in the Brazilian Context

Tania Nalborczyk Leites, Cesare Quinteiro Pica and Marcos Aurelio Izumida Martins (CERTI Foundation, Brazil); Nilo Rodrigues (Coelce, Brazil)

Microgrid for Remote Areas with Water Pumping, based on Wind-Diesel DER and Energy Storage

Marcelo Cendoya (Facultad de Ingeniería, Universidad Nacional de La Plata & Instituto LEICI, Argentina); Graciela Toccaceli (Instituto LEICI, Facultad de Ingeniería, UNLP, Argentina); Pedro Battaiotto (UNLP, Facultad de Ingeniería, Argentina); Roberto Vignoni (Instituto LEICI, Facultad de Ingeniería, UNLP, Argentina)

On Rural Microgrids Design - A Case Study in Brazil

Matheus F. Z. Souza (Universidade Federal de Itajubá, Brazil)
An Adaptive Protection Algorithm for Distribution Systems with Distributed Generation

Jamile P Nascimento, Núbia Brito and Benemar Alencar de Souza
(Federal University of Campina Grande, Brazil)

Room Picasso: 15:00 - 18:30

PoMS3: Energy and Distribution Management Systems

Chair: Alejandro Santos (UTE, Laboratory, Uruguay)

Quantifying Observability in State Estimation Considering Network Infrastructure Failures
Victor Meza and Xiomara Gomez (XM S.A. E.S.P, Colombia); Ernesto Perez (Universidad Nacional de Colombia, Colombia)

Energy management including photovoltaic panel and energy storage for smart grids through mobile application

Rodrigo Fagundes Eggea and Maurício Ferreira (Institutos Lactec, Brazil); Alexandre Aoki (Lactec, Brazil); Rodrigo Jardim Riella (Instituto de Tecnologia para o Desenvolvimento, Brazil)

A Reconfiguration Analysis Tool for Distribution Networks using Fast Decoupled Power Flow
Alexandre Fonseca (Universidade Federal do Paraná, Brazil); Odilon Tortelli and Elizete Lourenço (UFPR, Brazil).

Room Picasso: 15:00 - 18:30

PoPM3: Power System Protection and Monitoring (Part 1)

Chair: Leonardo Trigo (UTE, Uruguay)

Strengthen the Security of Control Model in Substation Automation with Service Tracking
Zhiyong Zhu (University of Xiangtan, P.R. China); Bin Duan (Teacher, P.R. China); Hanying Yuan and Mingjie Chen (University of Xiangtan, P.R. China)

Description of the new RAS to be installed in the Power System of Uruguay
Nicolás Yedrzejewski (Facultad de Ingeniería, UDELAR & UTE, Uruguay); Diego Beledo (UTE Uruguay & UTE Uruguay, Uruguay); David Bonjour (Estudios Dinámicos de la Red, UTE, Uruguay); Fredy Sanchez (UTE, Uruguay)

Description of the simulator developed for the new RAS to be installed in the power system of Uruguay

Diego Beledo (UTE Uruguay & UTE Uruguay, Uruguay); Nicolás Yedrzejewski (Facultad de Ingeniería, UDELAR & UTE, Uruguay)

An Approach to Evaluate Modern Fault Location Methods for Power Distribution Systems
Paulo Cavalcante (University of Campinas, Brazil); Madson de Almeida (Universidade Estadual de Campinas, Brazil); J. Mora Flórez (Universidad Tecnológica de Pereira, Colombia)

Room Picasso: 15:00 - 18:30

PoQE3: Power Quality and Efficiency

Chair: Marcelo Brehm (UTE, Uruguay)

A New Low Complexity Mathematical Algorithm for Harmonic Analysis in Industrial Areas Networks of Smart Grids

Washington Fernández (Universidad del Bio Bio, Chile); José Mahomar (Universidad del Bio, Chile).

Power loss and voltage variation in distribution systems with optimal allocation of distributed generation

Oscar Becerra (UFRGS, Brazil); Roberto Chouhy Leborgne (Universidade Federal do Rio Grande do Sul, Brazil); Daniel Gazzana and Cassio Bortolosso (UFRGS, Brazil).

System of Analysis and Management of Power Quality Indices in Distribution Networks
Guilherme de Azevedo e Melo (UNESP, Brazil); Rodrigo Oliveira (São Paulo State University, Brazil); Luis Carlos Origa De Oliveira (Universidade Estadual Paulista - UNESP, Brazil); Julio Borges (UNESP, Brazil); Carlos Alberto Canesin (São Paulo State University – UNESP, Brazil); Roberto Silva and Bernard Gouveia (Eletrobras Distribuição Alagoas, Brazil).

“Smartizing” Power Quality Assessment Based on IEC Smart Substation Automation
José Luiz Brittes (Unicamp, Brazil); Eduardo Nunes (UNICAMP, Brazil); José Antonio Jardini (Universidad de São Paulo, Brazil); Luiz Carlos Magrini (FDTE & UNIP, Brazil); Wagner Hokama and Luiz Gonzaga Fernandez Silva (Companhia Paulista de Força e Luz, Brazil)

Room Picasso: 15:00 - 18:30

PoRE3: Renewable Energy Integration and Storage (Part 1)

Chair: Jorge Fernandez Daher (IEEE IMS Chapter, Uruguay)

Hydrothermal Coordination Considering Wind and Pumping Storage Unit in the Colombian Smart Grid

María Victoria Ramírez and Antonio Escobar (Universidad Tecnológica de Pereira, Colombia); Alejandro Garces (Universidad Tecnológica de Pereira, Colombia)

Nonlinear Control of a Permanent Magnet Synchronous Wind Generator

Roberto D. Fernández (Universidad Nacional de la Patagonia San Juan Bosco, Facultad de Ingeniería, Argentina); Fernando Valenciaga (Universidad Nacional de La Plata, Argentina); Ricardo Peña (CONICET & Universidad Nacional de la Patagonia San Juan Bosco, Argentina).

Estimation of Photovoltaic Potential on Residential Rooftops Using Empirical Bayesian Estimator

Joel Villavicencio (Unesp & University, Brazil); Joel Melo (UNESP, Brazil); Antonio Padilha Feltrin (UNESP-IS, Brazil).

Development of a Model Output Statistic and implementation of an operational solar photo voltaic energy forecast model based in WRF

Claudio Porrini (Facultad de Ingeniería, Universidad de la República, Uruguay);

Alejandro Gutiérrez (UdelaR-FING, Uruguay); Gabriel Cazes Boezio (Universidad de la Republica, Uruguay); Gonzalo Hermida (University of Engineering - UdelaR, Uruguay); Diego Oroño (Universidad de la República & Universidad de la República, Uruguay); Martin Puppo (UTE, Uruguay).

A proposal to increase renewable generation to obtain a smarter electricity mix

Gustavo Rosero and Roberto Chouhy Leborgne (Universidade Federal do Rio Grande do Sul, Brazil); Cassio Bortolosso (UFRGS, Brazil).

Structuring of Systems for Monitoring and Supervision of Hydroelectric Plants as Intelligent Systems

Gustavo Perez Alvarez (Universidade Federal de Sergipe, Brazil); Nelson Kagan (Universidade de São Paulo, Brazil); José Antonio Jardini (Universidade de São Paulo, Brazil).

Analysis of relevant technical and economic aspects to support the choice of feasible locations for photovoltaic power plants in Brazil

Marília Carlini Freire, Cesare Quinteiro Pica and Marcos Aurelio Izumida Martins (CERTI Foundation, Brazil); Alexandro Luiz da Silva (Eletrosul, Brazil).

Room Picasso: 15:00 - 18:30

PoSB3: Demand Side Management; Smart Buildings and Home Automation

Chair: Celia Maria Sena (Ingeniería de Protecciones, UTE, Uruguay)

An implementation of a Home Energy Management platform for Smart Grid

Gonzalo Belcredi, Pablo Modernell, Nicolás Sosa, Leonardo Steinfeld and Fernando Silveira (Universidad de la República, Uruguay).

Management of Heating, Ventilation and Air Conditioning System for SHIM Platform

Filipe Fernandes (Polytechnic Institute of Porto, Portugal); Andre Carreiro (Polytechnic of Porto, Portugal); Hugo Morais (Polytechnic Institute of Porto & GECAD, Portugal); Zita Vale (Polytechnic Institute of Porto, Portugal); Danilo Gastaldello and Haroldo Amaral (Universidade de São Paulo, Brazil); André Nunes de Souza (Universidade Júlio de Mesquita Filho, Brazil).

Energy Demand Impact due to Mass Use of Electrical Vehicles and future Demand Side Management Strategies

W. Villamil (Universidad Nacional de Colombia, Colombia); C. Rojas (Universidad Nacional de Colombia – Bogotá, Colombia); S Téllez (Universidad Nacional de Colombia, Colombia); J. Rosero (Universidad Nacional de Colombia & UN, Colombia).

Room Picasso: 15:00 - 18:30

PoSP3: Smart Grid Projects, Tests, Experiences and Agenda

Chair: Alejandro Santos (UTE, Laboratory, Uruguay)

Smart Self-Healing Systems for Operation Centers

Fábio Antunes (Cemig Geração e Transmissão SA & Universidade Federal de Itajubá, Brazil); Paulo M Silveira (Federal University of Itajuba - UNIFEI, Brazil); Paulo Ribeiro (Eindhoven University of Technology, The Netherlands).

Low Cost Self-Healing Applied to Distribution Grid Supplying Brazilian Municipalities
Luis Antonio Felber (Companhia Energetica de Minas Gerais & Federal University of Itajubá, Brazil); Paulo Ribeiro (Eindhoven University of Technology, The Netherlands); Benedito D. Bonatto (UNIFEI - Federal University of Itajuba, Brazil); Antonio Souza (Universidade Federal de Itajubá, Brazil); João Alves da Silva Neto (Federal University of Itajuba, Brazil).

Geospatial Levelized Cost of Energy in Colombia: GeolCOE

Diego Mejia-Giraldo, Alejandro Castillo-Ramirez and Julian D Giraldo Ocampo (University of Antioquia, Colombia).

Análise Sistêmica dos Benefícios da Automação da Rede de Distribuição de Energia
Estudo de Caso - Sistema Ilha Sul (ISL)

Zenildo Silva (CELESC - Concessionária de Energia Elétrica de Santa Catarina & Divisão de Estudos de Operação, Brazil).

A Pilot Project of Street Lighting Telemanagement in a Smart Grid Environment

Andre Langner (Institute of Technology for Development, Brazil); Luciano Cavalcante Siebert (LACTEC - Instituto de Tecnologia para o Desenvolvimento, Brazil); Alexandre Aoki and Eduardo Yamakawa (Lactec, Brazil); Rodrigo Jardim Riella (Instituto de Tecnologia para o Desenvolvimento, Brazil); Laerte da Rosa Jr (Lactec, Brazil); Danilo Ribera (Light SESA, Brazil).

Mapping of Energetic Potential in Southern Brazil to Insertion of DG in Distribution Systems

L. Santos (Federal University of Santa Maria, Brazil); Luciane Canha (Federal University of Santa Maria (UFSM), Brazil); D. Bernardon and N. Knak Neto (Federal University of Santa Maria, Brazil); R. Pressi (AES SUL, Power Utility, Brazil).

Room Picasso: 15:00 - 18:30

PoUA3: Utility Assets and Power Electronics Converters

Chair: Leonardo Trigo (UTE, Uruguay)

Design of model-based controllers applied to a solid-state low voltage dc breaker
Juan D. Valladolid (Universidad Politécnica Salesiana, Ecuador); Ismael Minchala (Universidad de Cuenca, Ecuador); Mary J. Vergara (Universidad de los Andes, Venezuela).

Design and Implementation of a DC-DC Converter for Photovoltaic Applications

Oscar Ernesto Barrera Beltrán (Universidad Distrital FJDC, Colombia); César Leonardo Trujillo Rodríguez and Angie Alejandra Rojas Aldana (Universidad Distrital Francisco José de Caldas, Colombia).

Improvement of Transmission Utilization and Efficiency Using New Generation of Power Routers

Mariano Anello (Docente Investigador, Argentina); Alberto Del Rosso (Facultad Regional Buenos Aires, Argentina); Ticiana Caruso and Joaquín Calero (Universidad Tecnológica Nacional Facultad Regional Buenos Aires (UTN FRBA), Argentina).

A SuperCapacitor Agent for Providing Real-Time Power Services to the Grid

Lorenzo Reyes-Chamorro (EPFL & DESL, Switzerland); Andrey Bernstein (EPFL,

Switzerland); Mario Paolone (Swiss Federal Institute of Technology of Lausanne (EPFL), Switzerland); Jean-Yves Le Boudec (EPFL, Switzerland).

Analysis and control of a non-Inverter Buck-Boost Power DC-DC Converter by State-Space Modeling and applied to PV Systems under MPPT Operation

Rafael Ribeiro de Carvalho Vaz (Federal University of Goiás, Brazil); Sergio P Pimentel (Federal University of Goiás (UFG) & EMC, Brazil); Sérgio Araújo (UFG, Brazil)

Power Transformer Fault Diagnosis using DGA and Group Decision Making with Intuitionistic Fuzzy Preference Relations

Cesar H. R. Martins (University of São Paulo (USP), Brazil); M. A. Araujo Araujo (University of São Paulo, Brazil); Rogério Flauzino (EESC São Carlos - Escola de Engenharia de São Carlos, Brazil)

Ensaio de Conectores Tipo Perfurante para Conexão entre Transformador e Rede Secundária Multiplexada

Rodrigo Biancini (UFRGS, Brazil); Flávio Lemos (Federal University of Rio Grande do Sul, Brazil); Valner Brusamarello (UFRGS, Brazil)

Modeling and Control Strategy of a Single-Phase Uninterruptible Power Supply (UPS)

Dante Inga Narvaez (University of Campinas, Brazil); Marcelo Villalva (Campinas State University, Brazil)



Conference Room, 09:00 - 11:00**S5A: Distributed Energy - Microgrids (Part 1)**

Chair: E Martinez Cesena (The University of Manchester, United Kingdom)

Load Modelling Using Affine Arithmetic for Demand Side Management

Fernanda Avila (Universidad de Chile, Chile); Claudio Canizares (University of Waterloo, Canada); Doris Saez (University of Chile, Chile); Felipe Valencia Arroyave (Solar Energy Research Center, SERC-Chile & University of Chile, Chile)

A Methodology to Determine the Firm Capacity of Distributed Generation Units

Rodrigo Fiorotti and Jussara Fardin (Federal University of Espírito Santo, Brazil); Lucas Encarnação (Universidade Federal do Espírito Santo, Brazil); Clainer Bravin Donadel (Federal Institute of Espírito Santo, Brazil)

A Service-based Approach Toward Management of Grid-tied Microgrids

Babak Asghari (NEC Labs America, USA); Ali Hooshmand (NEC Laboratories America, USA); Ratnesh Sharma (NEC Laboratories America Inc, USA)

A Proposal for Microgrids Control Architecture as Aggregator

Alonso Chica (Universidad Autónoma de Colombia y Universidad Distrital Francisco José de Caldas, Colombia); César Leonardo Trujillo Rodríguez and Francisco Santamaria (Universidad Distrital Francisco José de Caldas, Colombia)

Room Gauguin, 09:00 - 11:00**S5B: System Protection and Monitoring (Part 1)**

Chair: Ruben Chaer (Institute of Electrical Engineering, University of the Republic Oriental del Uruguay, Uruguay)

Real-Time Experimental Analysis for Protection and Control of Smart Substations

Mehmet Cintuglu, Ricardo de Azevedo, Tan Ma and Osama Mohammed (Florida International University, USA).

Fast System for Analysis of Protection Events

Igor Brandão Machado Matsuo (University of Sao Paulo, Brazil); José Antonio Jardini (Universidade de São Paulo, Brazil); Wagner Hokama (Companhia Paulista de Força e Luz, Brazil); Luiz Carlos Magrini (FDTE & UNIP, Brazil); Ferdinando Crispino (ITAEE, Brazil); Paula Kayano (Foundation for the Technological Development of Engineering, Brazil).

Online prediction of power system trajectories from noisy data by penalized least-squares minimization

Juan Andrés Bazerque (UTE, Uruguay); Pablo Monzón (Universidad de la República, Uruguay); Pablo Pena (Universidad de la República & UTE, Uruguay); Alvaro Giusto (UDELAR, Uruguay).

Modal Parameter Estimation using Synchrophasors

Agustin Fraschini (Universidad de la Republica Oriental del Uruguay, Facultad

de Ingeniería, Uruguay); Celia Sena (Universidad de la República, Uruguay)
Synchronization of Phasor Measurement Units and its Error Propagation to
State Estimators.

Juan Andrés Bazerque, Ulises Ribeiro and Jorge Costa (UTE, Uruguay)

Room Cezanne, 09:00 - 11:00**S5C: Demand Management and Response**

Chair: Antonio Padilha Feltrin (UNESP-IS, Brazil)

Managing load deferability to provide power regulation

Federico Bliman, Andres Ferragut and Fernando Paganini (Universidad ORT Uruguay, Uruguay)

A Low Cost Smart Metering Infrastructure with Centralized Demand Response Management
Federico Aguirre, Fernando Magnago and Juan Alemany (National University of
Rio Cuarto, Argentina)

An optimization framework to assess TOU tariffs

Wadaed Uturbey (Federal University of Minas Gerais & UFMG, Brazil); Thaís Fátima Araújo and Aurelio Duarte (Federal University of Minas Gerais, Brazil); Irving Coura (Federal University of Minas Gerais, Brazil)

Evaluación Óptima de Inversiones en Almacenadores de Energía Eléctrica en Redes de Distribución

Mauricio Samper (CONICET, Argentina); Alberto Vargas (Universidad Nacional de San Juan, Argentina)

Energy Conservation in Smart Grid

Marcio V. P. Alcantara (ANEEL - Brazilian Electricity Regulatory Agency, Brazil); Luiz da Silva (UNICAMP, Brazil)

Room Renoir D, 09:00 - 11:00**S5D: Renewable Energy Integration and Storage**

Chair: Fernando Paganini (Universidad ORT Uruguay, Uruguay)

Modeling and Grid Connection of a Solid Oxid Fuel Cell (SOFC) based on P-Q Theory for Stationary Loads

Matheus B. O. Silva and Jussara Fardin (Federal University of Espírito Santo, Brazil); Lucas Encarnação (Universidade Federal do Espírito Santo, Brazil); Rodrigo Fiorotti (Federal University of Espírito Santo, Brazil).

Active and Reactive Power Control Capability in Wind Generation based on BDFIG machine
Pablo Emiliano Troncoso (Universidad Nacional de La Plata, Argentina); Pedro Battaiotto (UNLP, Facultad de Ingeniería, Argentina); Ricardo J Mantz (UNLP, Facultad de Ingeniería & CICPBA, Argentina).

SyncFuel - Concept of remotely synchronized Own-Consumption for charging Electric Vehicles
Jonas Maasmann, Jan Rettberg, Jens Schmutzler and Sven Gröning (TU Dortmund University, Germany); Christian Rehtanz (University of Dortmund, Germa-

ny); Christian Wietfeld (TU Dortmund University & Communication Networks Institute, Germany).

An analysis on the inclusion of photovoltaic in Brazil: technical and economic aspects
T. Nogueira (Fundação de Ensino e Pesquisa de Itajubá & CERIn - Centro de Excelência em Redes Elétricas Inteligentes, Brazil); Paulo Ribeiro (Unifei, Brazil).

An Estimation Method of State of Charge and Lifetime for Lead-Acid Batteries in Smart Grid Scenario

Javier Revelo Fuelagán (Universidad de Nariño, Colombia); John Barco (University of Nariño, Colombia).

Conference Room, 16:30 - 18:30

S8A: Distributed Energy - Microgrids (Part 2)

Chair: Daniel Izquierdo (UTE Laboratory, Uruguay)

Simulation and Control of Consumption and Generation of Hardware Resources in Microgrid Real-Time Digital Simulator

Omid Abrishambaf (Polytechnic of Porto, Portugal); Luis Gomes (Polytechnic Institute of Porto, Portugal); Pedro Faria (Polytechnic of Porto, Portugal); Zita Vale (Polytechnic Institute of Porto, Portugal)

Multi-Objective Optimal Power Management in Microgrids: A Comparative Study

Dany Mauricio Lopez and Eduardo Caicedo (Universidad del Valle, Colombia)

Optimal Allocation of Photovoltaic Plants in Electric Power Distribution Networks

Oswaldo R Saavedra (Federal University of Maranhao & IEE, Brazil)

MBPC Power Control in Three-phase Inverters for Grid-connected Applications

David Caballero, Federico Gavilán, Raúl Gregor, Jorge Rodas and Sergio Toledo (Universidad Nacional de Asunción, Paraguay); José Rodríguez-Piñeiro (University of A Coruña, Spain)

Room Gauguin, 16:30 - 18:30

S8B: System Protection and Monitoring (Part 2)

Chair: Alvaro Giusto (UDELAR, Uruguay)

Multi-Objective Planning of Recloser-Based Protection Systems on DG Enhanced Feeders

Miguel A. Velásquez and Nicanor Quijano (Universidad de los Andes, Colombia); Angela Cadena (Facultad de Ingeniería, Universidad de los Andes, Colombia)

A Risk-Based Methodology for Defining the Time of Intentional Controlled Islanding

Pablo Fernández-Porras (University of Costa Rica, Costa Rica); Mathaios Panteli and Jairo Quirós-Tortós (The University of Manchester, United Kingdom)

SOGI-FLL for synchronization and fault detection in an inverter connected to the grid

David Gamez Patiño and Edison Geovanny Guamá Erira (Universidad de Nariño, Colombia); Edisson Escobar Rosero (Institucion Universitaria CESMAG, Colombia); Javier Revelo Fuelagán (Universidad de Nariño, Colombia)

Solução Prática para Monitoramento Remoto de Tensão Baseada em Redes Neurais Artificiais

Ricardo Caneloi dos Santos (Universidade Federal do ABC, Brazil); Alex da Silva (UFABC, Brazil); Fernando B. Bottura and Mário Oleskovicz (Universidad de São Paulo, Brazil); Nolman B. Hartmann (Universidade Federal do ABC, Brazil)

Room Cezanne, 16:30 - 18:30**S8C: Demand Side Management, Smart Buildings, Home Automation**

Chair: Virginia Echinope, (Universidad de la República & Facultad de Ingeniería - Uruguay, Uruguay)

Load Management Applied to Intelligent Automation of Refrigerators

Lucca Zamboni and Thiago Lemme Lafalce (EDP-Bandeirante, Brazil); Moraes (UNIFEI, Brazil); Germano Lambert-Torres (PS Soluções, Brazil); Fernando Moana and Jônatas Duarte Lima (Enerfocus Energy Efficiency, Brazil)

Smart Grid Services Provided by Building Energy Management Systems

Birger Becker (FZI Research Center for Information Technology, Germany); Sebastian Hubschneider (Karlsruhe Institute of Technology, Germany); Ingo Mauer and Hartmut Schmeck (FZI Research Center for Information Technology, Germany); Thomas Leibfried (Karlsruhe Institute of Technology, Germany)

Building Integrated Photovoltaics for Smart Grids

Alexandre Fonseca (Universidade Federal do Paraná, Brazil); Andre Langner (Institute of Technology for Development, Brazil); Henry Salamanca, Luciano Cavalcante Siebert and Fabiano Ferronato (LACTEC - Instituto de Tecnologia para o Desenvolvimento, Brazil); Alexandre Aoki (Lactec, Brazil); Priscila Alves (UNICAMP, Brazil); Rodrigo Jardim Riella (Instituto de Tecnologia para o Desenvolvimento, Brazil)

Towards a Smart City: Design of a Domestic Smart Grid

Manuel Ortiz-Rangel, Luis Rueda-Vasquez, Cesar Duarte-Gualdrón and Johann Petit (Universidad Industrial de Santander, Colombia); Gabriel Ordóñez-Plata (Universidad Industrial de Santander & UIS, Colombia)

Economic Energy Management of a Microgrid Including Electric

Paulo Mendes (Federal University of Santa Catarina, Brazil); Julio Normey-Rico (Universidade Federal de Santa Catarina, UFSC, Brazil); Carlos Bordons (University of Seville, Spain)

Room Renoir D, 16:30 - 18:30**S8D: Power Quality - Instrumentation and Measurement**

Chair: Pablo Thomasset Trakalo (IEEE Uruguay, Uruguay)

An Ex-post Energy Rate Mechanism for Distribution Networks based on Real Time Metering

Hector Chavez (Universidad de Santiago, Chile)

Assessment of energy efficiency indicators on a residential building with plug-in electric vehicles and energy action plans for users

Andres D. Quevedo (Universidad Distrital Francisco Jose de Caldas, Colombia); Edwin G. Suarez, Sandra M. Arias and Francisco Santamaria (Universidad Distrital Francisco José de Caldas, Colombia); Jorge A. Alarcon (Universidad Distrital Francisco Jose de Caldas, Colombia).

A Novel Adaptive Current Harmonic Detection Method Applied in Multifunctional Single-Phase Solar Inverters

Lucas Santana Xavier (Universidade Federal de Viçosa, Brazil); Allan Fagner Cupertino (Universidade Federal de Minas Gerais, Brazil); Heverton Augusto Pereira (Universidade Federal de Viçosa, Brazil).

Abnormal consumption analysis for fraud detection: UTE-UdelaR joint efforts

Juan Pablo Kosut and Fernando Santomauro (UTE, Uruguay); Alicia Fernández (Universidad de la República & University, Uruguay); Federico Lecumberry (Universidad de la República & Facultad de Ingeniería, Uruguay).

Development of a Digital Optical Instrument Transformer with Process Bus Interface According to IEC 61850-9-2 Standard

Gilberto Igarashi (Escola Politécnica - Universidade de São Paulo, Brazil); Josemir Coelho Santos (University of Sao Paulo, Brazil); Shigueru Nagao Junior (University of Sao Paulo & Escola Politecnica, Brazil); Eduardo Pellini (University of Sao Paulo, Brazil)



Room Picasso: 15:00 - 18:30**PoCM7: Computational Methods and Optimization Techniques (Part 2)**

Chair: Pablo Pena (Universidad de la República & UTE, Uruguay)

Multiobjective Scheduling of Green-Powered Datacenters Considering QoS and Budget Objectives

Santiago Iturriaga and Sergio Nesmachnow (Universidad de la República, Uruguay)

An efficient approach to solve the combination between Battery Swap Station Location and CVRP by using the MTZ formulation

Andrés Arias, Juan Sánchez, Ricardo Hincapie, Mauricio Granada and Luis Martínez (Universidad Tecnológica de Pereira, Colombia)

Advanced Analytics for Non Technical Losses of Energy

Gladys Quintero Rojas (Research at MVM Ingeniería de Software, Colombia); Ricardo Alonso Gallego (Colombia & MVM Ingeniería de Software, Colombia)

Assessing the Statistical Consistency of the AMB State Estimator in Distribution Systems

Madson de Almeida (Universidade Estadual de Campinas, Brazil); Rafael Schincariol (University of Campinas, Brazil); Luis Ochoa (The University of Manchester, United Kingdom).

Room Picasso: 15:00 - 18:30**PoDR7: Demand Management; Demand Response**

Chair: Diego Sebastian Astessiano Dickson (UTE, Uruguay)

Residential Electric Load Curve Profile Based on Fuzzy Systems

Thays Abreu and Mara Lopes (Unesp, Brazil); Uiliam Nelson Alves (UNESP - Univ Estadual Paulista & Laboratório de Pesquisa em Controle (LPC), Brazil); Carlos Minussi (Univ Estadual Paulista Júlio de Mesquita Filho, Brazil); Anna Diva Lotufo (UNESP IS, Brazil).

Optimal Demand Response based on time-correlated utility in forward power markets

Sebastián Montes de Oca (Universidad de la República del Uruguay, Uruguay); Pablo Belzarena (Universidad de la Republica, Uruguay); Pablo Monzón (Universidad de la República, Uruguay).

Learning with smart grids: an implementation proposal for Uruguay

Andrés Aguirre, Martín Giachino, Alejandro Gutiérrez and Gabriel Cazes Boezio (University of the Republic, Uruguay).

Definition of Distinct Consumer Modelling Approaches for the Participation in Demand Response Programs Considering Distributed Generation

Fabio Pereira and Pedro Faria (Polytechnic of Porto, Portugal); Zita Vale (Polytechnic Institute of Porto, Portugal).

Electricity Demand Modeling for Rural Residential Housing: A Case Study in Colombia

Wilson Achicanoy (Universidad de Nariño, Colombia); John Barco (University of Nariño, Colombia).

Simulation of a Decentralized Optimal Demand Response Algorithm

Aldo Rondoni and Marcelo P Rey (UTE, Uruguay); Alvaro Giusto (UDELAR, Uruguay)

Room Picasso: 15:00 - 18:30**PoIC7: Information and Communications Technologies (ICTs)**

Chair: Elías Carnelli (Assistant Manager, Uruguay)

Simulation of a Distributed Generator with Wireless Communication using True-Time and PLECS

Jefferson Dias (Univ Estadual Paulista - UNESP, Brazil); Eduardo Liberado (University of Campinas, Brazil); Paulo Serni (UNESP / Sorocaba, Brazil); Fernando P Marafão (Unesp - Univ Estadual Paulista, Brazil); Eduardo P Godoy (UNESP - São Paulo State University & UNESP Sorocaba, Brazil)

OFDM Ótimo para smart grid

Washington Fernández (Universidad del Bio Bio, Chile); José Mahomar (Universidad del Bio, Chile)

Proposal DNP3 Protocol Simulation on NS-2 in IEEE 802.11g Wireless Network Ad Hoc Over TCP/IP in Smart Grid Applications

Alcides Ortega (UNESP-Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil); Ailton Shinoda Akira (Unesp, Brazil); Christiane Marie Schweitzer (UNESP-Univ Estadual Paulista, Brazil); Fabrizio Granelli (University of Trento, Italy); Aleciana Ortega (UNESP-Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil); Fabiola Bonvecchio (University of Leoben, Austria)

Medium Voltage Overhead Power-line as a Smart Distribution Grid for Onshore Oil & Gas Industries Automation and Broadband Data Transport

Leonardo Castor (Federal University of Espírito Santo, Brazil); Jair Adriano Lima Silva (Federal University of Espírito Santo, Brazil); Marcelo Segatto (Federal University of Espírito Santo, Brazil)

Room Picasso: 15:00 - 18:30**PoIM7: Power System Instrumentation and Measurements**

Chair: Elías Carnelli (Assistant Manager, Uruguay)

Link Quality Estimation for AMI

Cledson O. Sousa (Universidade Federal Fluminense & Universidade do Grande Rio, Brazil); Guilherme e Souza and Ricardo C Carrano (Universidade Federal Fluminense, Brazil); Celio Albuquerque (Fluminense Federal University, Brazil); Igor Monteiro Moraes (Universidade Federal Fluminense, Brazil); Luis Fernando do Nascimento Passos (Neo Domino Pesquisa em Sistemas Elétricos Ltda., Brazil); Rafael Homma (Celesc Distribuição S.A., Brazil); Arlan Bettiol (Avero Domino, Brazil); Antonio Carniato (Neo Domino, Brazil); Fernando Molina (Celesc Distribuição S.A., Brazil); Rodrigo Andrade (Celesc, Brazil)

- Image Processing as an Integration Tool between a Dam Safety System and Smart Grids
Alex de Oliveira (FDTE, Brazil); Luiz Carlos Magrini (FDTE & UNIP, Brazil); Hae Yong Kim (Universidade de Sao Paulo, Brazil); Edvaldo Carneiro and J lio P nfari (CESP, Brazil)
- Development of a Real-time Web Based Power Quality and Consumption Smart Meter
Ronimar Espindula Volkers (Federal University of Esp rito Santo, Brazil); Lucas Encarna  o (Universidade Federal do Esp rito Santo, Brazil); Anselmo Frizera (Federal University of Espirito Santo, Brazil)
- Behavior of current transformers under distorted waveforms
Gonzalo Aristoy (University of Republic Uruguay & UTE, Uruguay); Alejandro Santos (UTE, Laboratory, Uruguay); Leonardo Trigo, Marcelo Brehm and Daniel Slomovitz (UTE, Uruguay)
- A Power Standard System for Calibration of Power Analyzers
Daniel Slomovitz and Leonardo Trigo (UTE, Uruguay)

Room Picasso: 15:00 - 18:30**PoIS7: Impact on Electric Power Systems and Stability (Part 2)**

Chair: Maria Cristina Alvarez (IEEE PES Chapter, Uruguay)

- Voltage Collapse Analysis in a Graph Theoretical Framework
Claudia Catalina Caro-Ruiz (Universidad Nacional de Colombia, Colombia); Eduardo Mojica-Nava (National University of Colombia, Colombia)
- An IEEE Xplore database literature review regarding the interaction between electric vehicles and power grids
Andr s Arias, Mauricio Granada, Ricardo Hincapie, Juan S nchez and Luis Mart nez (Universidad Tecnol gica de Pereira, Colombia)
- Maximum Power Point Tracking: Platform for simulation and noise immune RCC implementation
Braulio R os (Universidad de la Rep blica, Uruguay); Diego Oro o (Universidad de la Rep blica & Universidad de la Rep blica, Uruguay); Mercedes Roland and Andrea Viscarret (Universidad de la Rep blica, Uruguay)
- A Model-Free Voltage Stability Security Assessment Method Using Artificial Intelligence
Mario Roberto Bastos (CTEEP, Brazil)

Room Picasso: 15:00 - 18:30**PoMi7: Distributed Energy Resources
MICROGRIDS (Part 2)**

Chair: Ricardo Franco (Mantenimiento y Obras de Protecci n UTE, Uruguay)

- Operation of a Microgrid with Optimal Power Assignment at the Generation Nodes
Ariel Loyarte and Luis Clementi (Universidad Tecnol gica Nacional, Argentina); Jorge R Vega (Universidad Tecnol gica Nacional & Facultad Regional Santa Fe, Argentina)

Two-stage Stochastic Day-ahead Optimal Resource Scheduling in a Distribution Network with Intensive Use of Distributed Energy Resources

Tiago Sousa (Polytechnic Institute of Porto, Portugal); Mohammad Ali Fotouhi Ghazvini (Polytechnic of Porto, Portugal); Hugo Morais (Polytechnic Institute of Porto & GECAD, Portugal); Rui Castro (IST - University of Lisbon & INESC-ID, Portugal); Zita Vale (Polytechnic Institute of Porto, Portugal)

Model and Simulation of a Microgrid Based on a Traditional Electrical Infrastructure

Michael Melo, Wendy Pantoja and Andres Pantoja (Universidad de Nariño, Colombia)

Impact of appliances harmonic content in microgrid environments

Yuri Rodrigues (Federal University of Itajuba, Brazil); Wilson Eberle (University of British Columbia Okanagan, Canada); Malcolm Metcalfe (Enbala Power Networks, Canada); Antonio Souza (Universidade Federal de Itajubá, Brazil)

La conexión semi-rígida de la generación distribuida como herramienta para las redes inteligentes

Sebastian Nesci (Universidad Nacional de Río Cuarto & Instituto de Protecciones de Sistemas Eléctricos de Potencia, Argentina); Leonardo Sanchez (Universidad Nacional de Río Cuarto, Argentina); Juan Carlos Gomez (U.N. de Río Cuarto, Argentina)

Proposition of Alternatives for Microgrid Insertion in Brazilian's Regulatory Context

Tania Nalborczyk Leites (CERTI Foundation & Federal University of Santa Catarina, Brazil); Cesare Quinteiro Pica and Marcos Aurelio Izumida Martins (CERTI Foundation, Brazil)

Interleaved Boost Converter for Multi-String Photovoltaic Topologies

Daniel Apablaza and Javier Munoz (Universidad de Talca, Chile).

Room Picasso: 15:00 - 18:30

PoPM7: Power System Protection and Monitoring (Part 2)

Chair: Enrique Briglia (UTE, Uruguay)

Power network state estimation algorithms and their use with synchrophasors

Gonzalo Aristoy (University of Republic Uruguay & UTE, Uruguay); Sebastian Isaurralde (Facultad de Ingeniería de la Universidad de la República & UTE, Uruguay); Emilio Font (Facultad de Ingeniería de la Universidad de la República, Uruguay); Alvaro Giusto (UDELAR, Uruguay)

Fuzzy-Based Orthogonal Decomposition Approach for Fault Diagnoses in Distribution Feeders of Smart Cities

Rogério Flauzino (EESC São Carlos - Escola de Engenharia de São Carlos, Brazil); Ivan Nunes da Silva (Universidade de São Paulo, Brazil); Danilo Spatti (USP, Brazil)

Use of Genetic Algorithm for Evaluation and Control of Technical Problems due to Load Shedding in Power Systems

Guilherme Borges (Daimon Engenharia e Sistemas & University of Sao Paulo, Brazil); Fabio Romero (Daimon Engineering and Systems, Brazil); Leonardo Henrique Tomassetti Ferreira Neto (University of Sao Paulo & Daimon Engenharia e Sistemas, Brazil); João Castilho Neto (Universidade Estadual Paulista - Faculdade de Engenharia de Ilha Solteira, Brazil); Andre Meffe and Alden Antunes (Daimon

Engineering and Systems, Brazil); Leonardo de Moura and Albérico A. P. da Silva Junior (Companhia Energética de Pernambuco, Brazil)
Desenvolvimento de um Relé Digital no LabVIEW para a Detecção de Ilhamento de Geradores Distribuídos

Nolman B. Hartmann, Ricardo Caneloi dos Santos and Thales Sousa (Universidade Federal do ABC, Brazil).

Room Picasso: 15:00 - 18:30

PoRE7: Renewable Energy Integration and Storage (Part 2)

Chair: Jorge Fernandez Daher (IEEE IMS Chapter, Uruguay)

Evaluation of Photovoltaic Generation Systems for Residential Users in Santa Fe (Argentina)
Emmanuel Sangoi and Ulises Manassero (Universidad Tecnológica Nacional, Argentina); Jorge R Vega (Universidad Tecnológica Nacional & Facultad Regional Santa Fe, Argentina).

Feasibility studies for the instalation of wind microgeneration in urban areas in Montevideo
Mario Vignolo (Facultad de Ingeniería, UDELAR, Uruguay); Lucas Narbondo (Facultad de Ingeniería Udelar, Uruguay); José Cataldo (Engineering Faculty Udelar, Uruguay); Federico González (Facultad de Ingeniería Udelar, Uruguay).

Storage system scheduling effects on the life of lead-acid batteries
Iván Serna-Suárez (Universidad Industrial de Santander, Colombia); Gabriel Ordóñez-Plata (Universidad Industrial de Santander & UIS, Colombia); Johann Petit (Universidad Industrial de Santander, Colombia); Gilberto Carrillo Caicedo (Universidad de Santander, Colombia).

Performance of a flap-type wave energy converter on the Uruguayan Atlantic coast
Rodrigo Alonso (Universidad de la República, Uruguay); Sebastián Solari (Universidad de la Republica, Uruguay); Santiago Correa and Agustín Lopez de Lacalle (Universidad de la República, Uruguay); Francisco Pedocchi and Luis Teixeira (Universidad de la Republica, Uruguay).

Integration of Wind power plants into the colombian power system
M. Caro (UPME, Colombia); J. Fonseca, B. Jiménez, R. Rodriguez and H. Zapata (Upme, Colombia).

Application of Energy Storage Element on a PV System in the Smart Grid Context
Filipe Perez, Júlio Custódio, Homero Ribeiro and Paulo Vitor de Souza (Universidade Federal de Itajubá, Brazil); Edison Motoki (UNIFEI, Brazil); Paulo Ribeiro (Unifei, Brazil).

Comparison between the energy generated from three types of c-Si photovoltaic modules and the temperature and irradiance of the city of Pasto, Colombia
Francisco Javier Eraso Checa, Edison Escobar Rosero and Olger Ferledy Erazo De La Cruz (Institucion Universitaria CESMAG, Colombia).

Diseño y montaje de un Parking Solar en el Centro de Capacitacion Norte de U.T.E
Diego Sebastian Astessiano Dickson (UTE, Uruguay).

Room Picasso: 15:00 - 18:30**PoSI7: Smart Grids Interoperability***Chair: Juan Pablo Kosut (UTE, Uruguay)*

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Juan C Tripaldi (Asociación Electrotécnica Argentina & Edenor S.A., Argentina);

Daniel Moreno (Asociación Electrotécnica Argentina, Argentina).

Proposal of a New Protocol for Smart Metering

Amanda Canestraro, Andreia Barbiero, Giordano Bruno Wolaniuk, Luciana Iantorno and Rodrigo Jardim Riella (Institutos LACTEC, Brazil); Danilo Ribera (Light SESA, Brazil).

Parameterization of IPsec Framework for Security in the Smart Grid Interoperability

Victor Neumann (UFPR & Programa de Pós Graduação em Engenharia Elétrica, Brazil); Christian Lyra (Universidade Federal do Paraná, Brazil); Keiko Fonseca (Universidade Tecnológica Federal do Paraná (UTFPR), Brazil); Clodomiro Unsihuay-Vila (Federal University of Paraná, Brazil); Pedro Rodrigues Torres Jr. (UFPR, Brazil).

Room Picasso: 15:00 - 18:30**PoSM7: Smart Grids and Electricity Markets***Chair: Juan Pablo Kosut (UTE, Uruguay)*

Economical viability assessment of a Wind Farm trading in the Spot Market

Claudia R. Cabrera Ottaviani (Advisor, Dpt. Electrical Energy, DNE-MIEM, Uruguay); Virginia Echinope (Director, Electrical Energy Dpt., DNE, MIEM, Uruguay); Andrés Osta (Advisor, Electrical Energy Dpt., DNE-MIEM, Uruguay); Ramón Méndez Galain (Engineering University (UdelaR), Uruguay).

Electricity Price Forecasting Using a Fuzzy System Tuned with a Differential Evolution Algorithm

Ivan Riaño and Oscar Perdomo (Universidad Distrital Francisco José de Caldas, Colombia).

Performance Simulation of the Stabilization Fund of Electric Power in Uruguay with and without smart grid controlled responsive demand

Maria Cristina Alvarez (IEEE PES Chapter, Uruguay); Lorena Di Chiara and Pablo Soubes (ADME, Uruguay); Ruben Chaer (Institute of Electrical Engineering - University of the Republic Oriental del Uruguay, Uruguay).

Study of Ancillary Service of Island Operation Capability in a Deregulated Market: a system dynamics approach

Juan David Marín Jiménez (Universidad Nacional de Colombia, Colombia); Sandra Ximena Carvajal Quintero (Universidad Nacional de Colombia, Manizales, Colombia); Josep M. Guerrero (Aalborg University, Denmark).





